

PATENT ABSTRACTS OF JAPAN(11)Publication number : **2003-334875**(43)Date of publication of application : **25.11.2003**

(51)Int.Cl.

**B32B 3/24
B32B 27/00
B60R 13/08**(21)Application number : **2002-144531**(71)Applicant : **KANEGAFUCHI CHEM IND CO LTD**(22)Date of filing : **20.05.2002**(72)Inventor : **KOYAMA RYOHEI****(54) TRIM MATERIAL OF CAR AND BASE MATERIAL THEREFOR****(57)Abstract:**

PROBLEM TO BE SOLVED: To provide a base material for a trim material of a car capable of reducing the noise in the car in order to enhance the comfortability of a passenger while holding characteristics as the base material for the trim material of the car such as lightweight properties, heat insulating properties, molding processability, heat resistance or the like, and to provide the trim material of the car obtained therefrom.

SOLUTION: The base material for the trim material of the car is obtained by laminating an impermeable film on either one of both surfaces of a foamed laminated sheet, wherein the base material has through-holes and having an air impermeable film for sealing the through-holes laminated thereto and has a foamed layer as a core layer, and non-foamed layers are laminated on both surfaces of the foamed layer. This base material has a high sound absorbing capacity by utilizing the interference effect of the vibration of the film on the through-holes and the sonic waves in the air layer behind the base material.

LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

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CLAIMS

[Claim(s)]

[Claim 1] The base material for automobile interior material characterized by consisting of base materials (1) which carried out the laminating of the aeration stop film (3) which has a through tube (2) and closes it.

[Claim 2] The base material for automobile interior material according to claim 1 characterized by carrying out the laminating of the aeration stop film (3) to the foaming laminating sheet with which a base material (1) uses a foaming layer (4) as a core layer.

[Claim 3] The base material for automobile interior material according to claim 2 characterized by carrying out the laminating of the non-foaming layer (5 6) to which a foaming laminating sheet becomes both sides of the foaming layer (4) which uses heat resistant resin as base material resin from thermoplastics.

[Claim 4] Claims 1 and 2 characterized by the diameter of the through tube prepared in the foaming laminating sheet being 0.1mm - 20mm, or the base material for automobile interior material given in three.

[Claim 5] Claims 1, 2, and 3 characterized by the thickness of an aeration stop film (3) being 5 micrometers - 200 micrometers, or the base material for automobile interior material of four publications.

[Claim 6] The base material for automobile interior material according to claim 1, 2, 3, 4, or 5 characterized by the base material resin of a foaming layer (4) consisting of conversion polyphenylene ether system resin.

[Claim 7] The base material for automobile interior material according to claim 1, 2, 3, 4, 5, or 6 characterized by the base material resin of one [by which the laminating was carried out to the foaming layer (4) / at least] non-foaming layer (5 6) consisting of conversion polyphenylene ether system resin.

[Claim 8] The base material for automobile interior material according to claim 1, 2, 3, 4, 5, 6, or 7 characterized by for the content of the phenylene ether system component in the conversion polyphenylene ether system resin which is base material resin of a foaming layer (4) being 25 % of the weight - 70 % of the weight, and the content of a styrene system component being 75 % of the weight - 30 % of the weight.

[Claim 9] The base material (1) which carried out the laminating of the aeration stop film (3) which has two or more through tubes (2), and closes it The laminating of the aeration stop film (3) is carried out to one field of the foaming laminating sheets which carried out the laminating of the non-foaming layer (5 6) which becomes both sides of the foaming layer (4) which uses heat resistant resin as base material resin from thermoplastics. The base material for automobile interior material with which the laminating of the epidermis material is carried out to one field of these base materials (1).

[Claim 10] The base material for automobile interior material according to claim 9 characterized by epidermis material being a nonwoven fabric.

[Claim 11] Automobile interior material which fabricates the base material for automobile interior material of a publication to either of claims 1-10, and is obtained.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the base material for automobile interior material, and automobile interior material. It is related with the base material for automobile interior material used in order to fabricate the automobile interior material which can reduce the noise in the car in more detail in order to raise crew's amenity, and automobile interior material.

[0002]

[Description of the Prior Art] Conventionally, what fabricated the laminating sheet which carried out the laminating of the non-foaming layer of a styrene maleic anhydride copolymer in the vertical side of the foaming layer of a styrene maleic anhydride copolymer in the desired configuration as automobile interior material was used widely. Those automobile interior material had the description that it is lightweight, adiathermic is high and fabrication nature is excellent.

[0003] However, when the long duration pan of the above conventional automobile interior material was carried out to the elevated temperature, since thermal resistance was inadequate, the front section might hang down by the self-weight, and problems, such as producing a (heat sag) and deformation, might be generated.

[0004] Then, in order to solve these problems, the automobile interior material which used an inorganic glass fiber and composite material of plastics as the base has come to be used. However, in this composite material, although the quality of thermal resistance is maintainable, since lightweight-ization was not able to be attained upwards and the glass fiber was used, there was a problem that recycle nature was bad and became cost quantity.

[0005] In order to solve such a problem, the foaming laminating sheet for automobile interior material using the foaming laminating sheet which carried out the laminating of the denaturation PPE system resin non-foaming layer to both sides of the denaturation polyphenylene ether system resin (it is described as "denaturation PPE system resin" below) foaming layer which is lightweight and has thermal resistance is proposed (JP,4-11162,U). Moreover, the foaming laminating sheet for automobile interior material which carried out the laminating of the denaturation PPE system resin non-foaming layer to both sides of the denaturation PPE system resin foaming layer which specified many physical properties, such as expansion ratio of 5-20 times, thickness of 2-6mm, and 5 - 25% of rates of an open cell etc., is proposed by JP,6-344483,A. The foaming laminating sheet for automobile interior material using these denaturation PPE system resin is excellent in thermal resistance, and since it is lightweight, it supposes that hanging down by the deformation and the self-weight under an elevated temperature etc. will be improvable.

[0006] Furthermore, although the automobile is high-performance[upgrading and]-ized and calm nature in the car is called for in recent years In order not to give the absorption-of-sound engine performance which is deeply related to calm nature in the car in the automobile interior material using the above-mentioned denaturation PPE system resin foaming laminating sheet but to make the absorption-of-sound engine performance give To stick acoustic material, such as use of the expensive epidermis material to which the absorption-of-sound engine performance was given, and an urethane foaming layer, etc. was needed, and the rise of ingredient cost or a manufacturing cost was caused.

[0007] On the other hand, what used urethane foam (JP,63-199182,A), urethane foam, fiber (JP,2-63703,A), and a staple fiber (JP,2-95838,A) from the former as automobile interior material equipped with the absorption-of-sound engine performance is known. In the automobile interior material equipped with these absorption-of-sound engine performance, if a sound hits a base material, the viscous friction of air arises [that aerial vibration] in propagation and this hole part to the air of the hole part inside a base material, a part of energy of a sound will be transformed into heat energy, and the absorption-of-sound engine performance will arise. That is, by resistance to a motion of air, the vibration declines and the effectiveness that a sound becomes small is used. However, since it was discovered only when a base material has permeability, this effectiveness needed to be the foaming laminating sheet of an open cell.

[0008] However, when the base material which has permeability was used and the flow of air arose from the interior-of-a-room side of a car to an outdoor side, since an epidermis layer played a role of a filter and the epidermis layer upper part became dirty in the shape of a hole, it had become a problem.

[0009] On the other hand, the degree of freedom of vibration of a non-foaming layer by which the laminating was carried out to the foaming layer is raised, and using the cross protection of the sound by vibration of a non-foaming layer is known for making a foaming layer form into high foaming in the approach of raising the absorption-of-sound engine performance of the closed cell system foaming laminating sheet of non-permeability itself. However, as for the absorption-of-sound engine performance of a non-permeability base material, the demand of high-performance-izing in recent years has come to be expected the improvement of opposite *Perilla frutescens* (L.) Britton var. *crispa* (Thunb.) Decne.

[0010]

[A means to solve a technical problem] In the base material for automobile interior material, this invention persons prepare a through tube in a foaming laminating sheet, and came to complete a header and this invention for the ability of high absorption-of-sound nature to be given by making vibration of the film on the through tube section, and the cross protection of the acoustic waves in a base material back air space discover satisfactory about indoor ventilation dirt by [of this foaming laminating sheet] carrying out the laminating of the aeration stop film to one of fields at least.

[0011] That is, this invention is a base material for automobile interior material characterized by consisting of base materials (1) which carried out the laminating of the aeration stop film (3) which has the through tube (2) of 1 plurality and closes it.

2) The base material for automobile interior material of one publication characterized by carrying out the laminating of the aeration stop film (3) to the foaming laminating sheet with which a base material (1) uses a foaming layer (4) as a core layer.

[0012] 3) The base material for automobile interior material of two publication characterized by carrying out the laminating of the non-foaming layer (5 6) to which a foaming laminating sheet becomes both sides of the foaming layer (4) which uses heat resistant resin as base material resin from thermoplastics.

4) Claims 1 and 2 characterized by the diameter of the through tube prepared in the foaming laminating sheet being 0.1mm - 20mm, or the base material for automobile interior material given in three.

[0013] 5) 1, 2 and 3 which are characterized by the thickness of an aeration stop film (3) being 5 micrometers - 200 micrometers, or the base material for automobile interior material of four publication.

6) 1, 2, 3 and 4 which are characterized by the base material resin of a foaming layer (4) consisting of conversion polyphenylene ether system resin, or the base material for automobile interior material of five publication.

7) The base material for automobile interior material of the 1, 2, 3, 4, 5, or 6 publication characterized by the base material resin of one [by which the laminating was carried out to the foaming layer (4) / at least] non-foaming layer (5 6) consisting of conversion polyphenylene ether system resin.

[0014] 8) 1, 2, 3, 4, 5 and 6 which are characterized by for the content of the phenylene ether system component in the conversion polyphenylene ether system resin which is base material resin of a foaming layer (4) being 25 % of the weight - 70 % of the weight, and the content of a styrene system

component being 75 % of the weight – 30 % of the weight, or the base material for automobile interior material of seven publication.

[0015] 9) The base material (1) which carried out the laminating of the aeration stop film (3) which has two or more through tubes (2), and closes it The laminating of the aeration stop film (3) is carried out to one field of the foaming laminating sheets which carried out the laminating of the non-foaming layer (5 6) which becomes both sides of the foaming layer (4) which uses heat resistant resin as base material resin from thermoplastics. The base material for automobile interior material with which the laminating of the epidermis material is carried out to one field of these base materials (1).

10) The base material for automobile interior material given in nine characterized by epidermis material being a nonwoven fabric.

11) Automobile interior material which fabricates the base material for automobile interior material of a publication to either 1-10, and is obtained.

[0016]

[Embodiment of the Invention] Next, the example of the automobile interior material concerning this invention and the foaming laminating sheet for automobile interior material is explained in detail based on a drawing.

[0017] The base material (1) which drawing 1 shows typically the configuration of the automobile interior material concerning 1 operation gestalt of this invention, and carried out the laminating of the aeration stop film (3) to the through tube (2) To both sides of a foaming core layer (4), a non-foaming layer (5 6) is the foaming laminating sheet by which the laminating was carried out, the laminating of the aeration stop film is carried out through the adhesives layer, and the laminating of the allophone prevention layer (8) is carried out for epidermis material (7) to the rear-face side at the field by the side of an aeration stop film. However, this invention does not receive a limit at all by the existence of this allophone prevention layer (8).

[0018] The base material (1) which drawing 2 shows typically the configuration of the automobile interior material concerning other operation gestalten of this invention, and carried out the laminating of the aeration stop film (3) to the through tube (2) To both sides of a foaming layer (4), the laminating of the non-foaming layer (5 6) is carried out, and the laminating of the epidermis material (7) is carried out to the rear-face side through the adhesives layer (9) to them, using the aeration stop film by which is a foaming laminating sheet and a laminating is further carried out through an adhesives layer (10) as an allophone prevention layer.

[0019] Drawing 3 shows typically the configuration of the automobile interior material concerning the operation gestalt of further others of this invention, and the laminating of the allophone prevention layer (8) is further carried out on the allophone prevention layer (aeration stop film) of the construct of drawing 2.

[0020] As long as the base material of the above-mentioned publication holds the through tube and the aeration stop film, which the foaming core layer and non-foaming layer may be used for it. Furthermore, it is not necessarily restricted to a foaming laminating sheet which was illustrated, and a configuration [****] which has an allophone prevention layer and epidermis material further, either.

[0021] As a material which constitutes a base material, when an example is taken in fabrication nature, lightweight nature, thermal resistance, adiathermic, recycle nature, and cost nature, it is desirable to use the base material which carried out the laminating of the non-foaming layer which turns into a foaming core layer which uses heat resistant resin as base material resin from thermoplastics.

[0022] As heat resistant resin used for the foaming layer (4) of this invention, it is known by this contractor noting that it has thermal resistance, and any resin generally marketed can be used. If it illustrates, a styrene-acrylic-acid copolymer, a styrene maleic anhydride copolymer, Heat-resistant polystyrene system resin, such as a styrene-itaconic-acid copolymer; The blend object of polystyrene (PS) or heat-resistant polystyrene, and polyphenylene ether (PPE), Styrene phenylene ether copolymers, such as a styrene graft polymerization object to PPE, Denaturation polyphenylene ether system resin of ** (denaturation PPE system resin); it is polyolefin resin, such as polyester resin; polypropylene illustrated with polycarbonate resin; and polybutylene terephthalate, or polyethylene terephthalate, and polyethylene, etc. Two or more sorts can also be used for these resin.

[0023] Also in these, it is excellent in quality, such as thermal resistance and rigidity, and also since workability and manufacture are easy for conversion PPE system resin, it is desirable. As PPE system resin used, for example Pori (2, 6-dimethyl phenylene -1, 4-ether), Pori (2-methyl-6-ethyl phenylene-4-ether), Pori (2, 6-diethyl phenylene 1, 4-ether), Pori (2, 6-dipropyl phenylene -1, 4-ether), Pori (the 2-methyl-6-n-propyl phenylene -1, 4-ether), Pori (the 2-methyl-6-n-butyl phenylene -1, 4-ether), Pori (the 2-methyl-6-KURORU phenylene -1, 4-ether), Pori (the 2-methyl-6-bromine phenylene -1, 4-ether), Pori (the 2-ethyl-6-KURORU phenylene -1, 4-ether), etc. are mentioned, and these are independent -- or two or more sorts are combined and it is used.

[0024] As PS system resin mixed to denaturation PPE system resin and PPE system resin, it is resin which uses styrene or its derivative, for example, alpha methyl styrene, 2, 4-dimethyl styrene, mono-KURORU styrene, dichloro styrene, p-methyl styrene, ethyl styrene, etc. as a principal component. Therefore, PS system resin may be the copolymer made by copolymerizing not only with the homopolymer which consists only of styrene or a styrene derivative but with other monomers.

[0025] Moreover, as an example of a polymerization and the styrene monomer which carries out graft polymerization preferably, styrene, alpha methyl styrene, 2, 4-dimethyl styrene, mono-KURORU styrene, dichloro styrene, p-methyl styrene, ethyl styrene, etc. are raised to said PPE system resin, for example. These may be used independently and may be combined two or more sorts. Among these, styrene is desirable from versatility and the point of cost.

[0026] As base material resin used for the foaming layer (4) of this invention, when using denaturation PPE system resin As a phenylene ether component, 75 - 30 weight section desirable still more preferably as 25 - 70 weight section and a styrene component usually as a phenylene ether component -- as 35 - 60 weight section and a styrene component -- 65 - 40 weight section -- as 38 - 58 weight section and a styrene component, 62 - 42 weight section is good as a phenylene ether component especially preferably. It is in the inclination for thermal resistance to be inferior when there are few mixed rates of PPE system resin, and when there are many mixed rates of PPE system resin, since the viscosity at the time of a heating flow rises, there is an inclination for foaming to become difficult.

[0027] If compatibility with the heat resistant resin foaming layer (4) Used avoids as a foaming agent in foaming, general-purpose gas can be used. Preferably, it is hydrocarbon system gas, and butane, a pentane, etc. will be mentioned if it illustrates. The fizz the commercial butane excels [fizz] in compatibility and fizz with heat resistant resin as a foaming agent which forms the foaming layer (4) which used denaturation PPE system resin as heat resistant resin, and the mixing ratio of an isobutane and normal butane excelled [fizz] in the mixed gas of 85 to 15 very much also especially in the commercial butane also in these is shown. Moreover, the foaming agent in a foaming layer (4) has 1 to 7 desirable weight sections, and they are 5 weight sections from 3 weight sections most preferably. [weight]

[0028] As for the foaming layer (4) using denaturation PPE system resin as heat resistant resin, it is desirable that thickness is 3-20mm and further 4-10mm. The thickness of a foaming layer (4) may be inferior to reinforcement and adiathermic in it being less than 3mm, and it may not be suitable as automobile interior material. On the other hand, when exceeding 20mm, it may be unsuitable practically from the reasons of reservation of the tooth space of the automobile interior of a room, the limit on interior design, etc.

[0029] As for the foaming layer (4) using denaturation PPE system resin as heat resistant resin, it is desirable that it is 20 to 100 times and further 30 to 60 times the expansion ratio of this. The automobile interior material in this invention reduces the elastic modulus of a foaming layer (4), this uses the cross protection of the sound by vibration of a non-foaming layer by which the laminating was carried out to the foaming layer (4), when expansion ratio is less than 20 times, the effectiveness of elastic-modulus reduction is not enough, and the absorption-of-sound engine performance does not tend not to improve. Moreover, when expansion ratio is 100 or more times, a cel film consistency becomes low too much, and there is an inclination for thermal resistance to get worse.

[0030] 70% or more and 80 more% or more of the foaming layer (4) using denaturation PPE system resin as heat resistant resin has a desirable rate of a closed cell. When the rate of a closed cell is 70% or less, there is an inclination to be inferior to adiathermic and rigidity.

[0031] In the heat resistant resin of the foaming layer (4) used in this invention, a cellular regulator,

lubricant, an antioxidant, an antistatic agent, a pigment, a stabilizer, an odor reduction agent, etc. may be added if needed.

[0032] next, as thermoplastics used for a non-foaming layer (5 6) Although heat-resistant PS system resin, denaturation PPE system resin, a polypropylene resin, polyethylene system resin, polyethylene terephthalate (PET) system resin, polyamide (nylon) system resin, etc. are mentioned, and these are independent, or two or more sorts are combined and it is used When using denaturation PPE system resin as a foaming layer (4), denaturation PPE system resin and heat-resistant PS system resin are preferably used from an adhesive viewpoint with this resin layer.

[0033] When using denaturation PPE system resin as a non-foaming layer (5 6) The monomer which makes a subject PPE system resin and a styrene system compound, or its polymer performs denaturation by the polymerization or mixing like the case of an above-mentioned foaming layer (4). For example, mixture with the PPE-styrene copolymer which carried out the polymerization of the styrene monomer to the mixed resin of PPE system resin and PS system resin and PPE system resin, this copolymer and PS system resin, or PPE system resin, the mixture of that copolymer, PPE system resin, and PS system resin, etc. are mentioned. among these -- coming out -- the mixed resin of PPE system resin and PS system resin is easy for manufacture -- etc. -- it is desirable from a point.

[0034] It is the same as that of the case where the example of these PPE(s) system resin, PS system resin, or a styrene monomer, the example of instantiation, PS system resin, a styrene monomer, and the monomer in which a polymerization is possible, the reason for using it, etc. are explained in a foaming layer (4) although it was desirable.

[0035] When using conversion PPE system resin, as a phenylene ether component, 75 - 25 weight section is desirable still more desirable as 15 - 75 weight section and a styrene component, and 80 - 40 weight section is good as base material resin used for a non-foaming layer (5 6), as 20 - 60 weight section and a styrene component as a phenylene ether component. If it is in the inclination for thermal resistance to be inferior when the operating rate of PPE system resin is too small and the operating rate of PPE system resin is too large, the viscosity at the time of a heating flow may rise, and shaping may become difficult.

[0036] Heat-resistant PS system resin desirable as base material resin of a non-foaming layer (5 6) is the copolymer (it is described as "St system copolymer" below.) of styrene or its derivative, and other monomers, and nitril compounds, such as unsaturated carboxylic acid, such as a maleic acid, a fumaric acid, an acrylic acid, methacrylic acid, and an itaconic acid, or a derivative of those and its acid anhydride, acrylonitrile, and meta-acrylonitrile, or the derivative of those is mentioned, for example as the styrene which has a heat-resistant improvement effect, or the derivative and the monomer which can be copolymerized. These may be used independently, may be combined two or more kinds and may be used. The styrene which has a heat-resistant improvement effect, or the derivative and the monomer which can be copolymerized is usually preferably used in the range below 30 weight sections below 40 weight sections.

[0037] Moreover, in case the polymerization of styrene or the styrene derivative is carried out, you may be a copolymer with nitril compounds, such as unsaturated carboxylic acid, such as that to which the polymerization of synthetic rubber or the rubber latex was added and carried out, a maleic acid, a fumaric acid, an acrylic acid, methacrylic acid, and an itaconic acid, or a derivative of those and its acid anhydride, acrylonitrile, and meta-acrylonitrile. Among these, a styrene-maleic-anhydride system copolymer, a styrene-acrylic-acid system copolymer, a styrene-methacrylic acid system copolymer, and acrylonitrile-butadiene-styrene copolymer are desirable from the heat-resistant improvement effect, versatility, and the field of cost then.

[0038] Heat-resistant PS system resin may be used independently, or may be combined two or more kinds. Moreover, heat-resistant PS system resin may be blended with other thermoplastics, and may be used, and vinyl chloride system resin, such as polyolefines, such as polystyrene, HIPS, a polycarbonate, polyester, polyethylene, and polypropylene, and a polyvinyl chloride, a polyether ether sulfone, polysulfone, polyamides, those copolymers, etc. are raised as thermoplastics to blend. Among these, the field of that versatility and homogeneity distribution are possible then, that the shock-proof improvement effect of a non-foaming layer is large, and cost etc. to HIPS is desirable. Being able to use a thing well-known as HIPS, the content of a rubber component is usually 1 - 15 % of the

weight.

[0039] The thickness of a non-foaming layer (5 6) has 50-300 micrometers desirable further 75-200 micrometers. When the thickness of a non-foaming layer (5 6) is thinner than 50 micrometers, reinforcement, rigidity, thermal resistance, etc. are inferior, and in being thicker than 300 micrometers, it is in the inclination for the moldability of a laminating sheet to be inferior.

[0040] independent [in a shock-proof amelioration agent, a bulking agent, lubricant, an antioxidant, an antistatic agent, a pigment, a stabilizer, an odor reduction agent etc.] if needed, when forming a non-foaming layer (5 6) -- or two or more sorts may be combined and you may add.

[0041] In case a shock-proof amelioration agent conveys punching processing, laminating sheet, and Plastic solid at the time of fabricating the laminating sheet on which carried out the laminating of the non-foaming layer (5 6) to the foaming layer (4), and it was made to foam the 2nd order as automobile interior material, it is effective in preventing the crack of a non-foaming layer (5 6) etc. If the effectiveness is demonstrated by mixing to base material resin as a shock-proof amelioration agent, it can be especially used without limitation. A shock-proof amelioration agent may be the component which can demonstrate the shock-proof amelioration effectiveness introduced into thermoplastics by denaturation by the polymerization, for example, also when mixing what contains a shock-proof amelioration component like HIPS and using it for a non-foaming layer, it can give shock resistance to a non-foaming layer (5 6).

[0042] It is the cylinder-like hole with which the base material (1) which consists of a non-foaming layer (5 6) by which the laminating was carried out, or the base material which carried out the laminating of an adhesives layer, the allophone prevention layer, etc. further was formed in a foaming layer (4) and its both sides by punching etc. as a through tube to hold, and it is desirable that the diameter of circle is 0.1mm - 20mm. Vibration of an aeration stop film by which the laminating was carried out to a diameter being 0.1mm or less on the base material (1) is checked, and are not fully discovered, and it becomes impossible for the handling nature after shaping and rigidity to fall that it is 20mm or more, or to obtain the product which the deformation at the time of a Plastic solid configuration or a heatproof became large, and was stabilized. Moreover, it is desirable that it is 100mm or less about the pitch of a through tube more greatly than the diameter of a hole. If a pitch is small to the diameter and equivalent extent of a hole, it will become impossible to be unable to maintain the configuration as a Plastic solid, or for the handling nature after shaping and rigidity to fall, or to obtain the product which the deformation at the time of a Plastic solid configuration or a heatproof became large, and was stabilized. It becomes impossible to demonstrate the absorption-of-sound engine performance in the case of 100mm or more.

[0043] As a film used as an aeration stop film, if transparency of air is made impossible, it will be known by this contractor, and any film generally marketed can be used. Especially, the good nature [layer / a non-foaming layer epidermis material, and / allophone prevention] of adhesion to a polyolefine system film is desirable. if it illustrates -- low density polyethylene, high density polyethylene, and a line -- homopolymers, such as polyethylene, -- Ethylene propylene rubber, an ethylene-vinyl acetate copolymer, ethylene, and methacrylate, The copolymer of olefins, such as acrylate and a butene, and the monomer which can be copolymerized, Moreover, the polyethylene system resin which consists of such mixture etc., the homopolymer of a propylene, The polypropylene resin which consists of copolymers of a propylene vinyl acetate copolymer, a propylene, olefins, such as methacrylate, acrylate, and a butene, and the monomer that can be copolymerized, or such mixture is desirable. In these, when heat-sealing nature is taken into consideration, polyethylene is desirable and straight chain-like low density polyethylene (L-LDPE) is still more desirable. This film (3) functions as epidermis material or an allophone prevention layer glue line, as shown in drawing 1 and 2.

[0044] 5 micrometers - 200 micrometers of thickness are desirable. In the case of 5 micrometers or less, the adhesive property of the epidermis material by which a laminating is carried out, or an allophone prevention layer cannot be reduced on it, and a good Plastic solid cannot be acquired. In the case of 200 micrometers or more, vibration sufficient on a through tube is not discovered, and it becomes impossible moreover, to give the absorption-of-sound engine performance of the purpose.

[0045] As an example of epidermis material (7), what is used as conventional automobile interior material can be used. For example, although textile fabrics and a nonwoven fabric are arranged, in

these, they are polyethylene terephthalate, polypropylene, a polyamide (nylon), a polyacrylonitrile, and modacryl (for example, the thing of natural materials, such as synthetic resin, such as "a money Charon (trademark)" by Kaneka Co., Ltd. etc., and wool, cotton, and the thing which combined them suitably are used.). What carried out the laminating of the foaming layer which changes from polyurethane foam to such epidermis material (7) further if needed in the monolayer or the double layer can be used.

[0046] The base material for automobile interior material described above can be fabricated good by the shaping approach used for usual. In that case, about the base material for automobile interior material which carried out the laminating of the epidermis material, it is fabricated so that this epidermis material may become an in-the-car side.

[0047]

[Example] Although this invention is further explained at a detail based on an example below, thereby, this invention does not receive a limit at all. The resin used for the example and the example of a comparison is shown in Table 1.

[0048]

[Table 1]

名称	商品名	製造会社	PPE成分 (%)	PS成分 (%)	ゴム成分 (%)	その他成分 (%)
PPE樹脂 (A)	ノリル EFN-4230	日本 GE プラスチックス(株)	70	30		
PS樹脂 (B)	ホリスチレン G8102	A&Mスチレン (株)		100		
SMAA共重合体 (C)	ホリスチレン G9001	A&Mスチレン (株)		92		メタアクリル酸 8
HIPS樹脂 (D)	ホリスチレン H8117	A&Mスチレン (株)		87.5	12.5	

[0049] In addition, each sign about the resin shown in Table 1 is as follows.

Conversion PPE : Conversion polyphenylene ether resin PS : Polystyrene resin HIPS : High-impact-polystyrene resin [0050] The evaluation approach performed in the example and the example of a comparison is shown below.

The thickness of 20 places was measured crosswise [of the foaming laminating sheet for automobile interior material the primary evaluation (thickness of foaming layer and Plastic solid) foaming sheet of the base material for automobile interior material, and a Plastic solid], and the average of the measured value was computed.

[0051] (Expansion ratio) It is JIS about the consistency df of a primary foaming sheet. K It measures according to 7222 and is the consistency dp of conversion PPE system resin. JIS K It measured according to 7112 and asked from the degree type.

Expansion ratio = dp/df [0052] (Rate of a closed cell) ASTM It measured according to D-2859. (A multi-pycnometer (made in Beckmann) is used)

(Eyes) The average was computed, after cutting down the test piece of 100mmx100mm magnitude and measuring those weight from five places of the direction of a knockout of a primary foaming sheet.

[0053] (Normal incidence sound absorption coefficient measurement) Measurement of the normal incidence sound absorption coefficient by JIS-A -1405 estimated. In addition, in order to bring close to the mounting condition to an automobile, incidence of the sound was carried out from the epidermis material side. Measurement measured by the measurement machine (test-frequency range: 500-6300Hz) of 29mm aperture, and 15mm of back air spaces. The following criteria were used in consideration of the 1000Hz - 5000Hz average normal incidence sound absorption coefficient

demand as automobile interior material as criteria of a judgment in a commercial scene.

1000Hz – 5000Hz average normal incidence sound absorption coefficient $O \geq 0.25$ or more \times .. Less than 0.25 [0054] (Example 1) The foaming agent (iso-butane / n-butane = 85/15 % of the weight) 3.4 weight section which uses iso-butane as a principal component to the mixed resin 100 weight section which mixed the conversion PPE (resin A) 57.1 weight section and the PS (resin B) 42.9 weight section as a foaming layer (4) so that it might become 40 % of the weight of PPE resinous principles and 60 % of the weight of PS resinous principles was kneaded with the extruder. One 35 times the expansion ratio [the thickness of 5.5mm which extruded with the circular dice, and was foamed and formed, and] of this, and the foaming layer of 85% eyes 160 g/m² of rates of a closed cell were used.

[0055] The film with a thickness of 120 micrometers it is thin from the mixed resin which mixed the conversion PPE (resin A) 28.6 weight section and the PS (resin B) 71.4 weight section as an interior-of-a-room side non-foaming layer (5) so that it might become 20 % of the weight of PPE system resinous principles and 80 % of the weight of PS system resinous principles was used.

[0056] The film with a thickness of 150 micrometers using the mixed resin of the SMAA (copolymer-resin C) 50 section and the HIPS (resin D) 50 section as an outdoor side non-foaming layer (6) was used.

[0057] As an allophone prevention layer (8), the web which consists of 1.6decitex \times fiber length of 40mm of diameters of fiber of polyethylene terephthalate was used, and 25g of field eyes/and the water needle punch nonwoven fabric sheet of m² which were obtained by performing water needle punching processing from the top face of this web were used.

[0058] As an aeration stop film (3), the L-LDPE (straight chain-like low density polyethylene) non-oriented film with a thickness of 10 micrometers was used.

[0059] As an aeration stop film adhesive layer (10), the curing agent (epicure U by Japan Epoxy Resin company) 20 weight section was mixed in the epoxy resin (EPIRETTSU 880 by Japan Epoxy Resin company SAW65) 100 weight section, and the mixed solution which diluted the mixture concerned with ethanol 10 times was used using the roll coater, having applied it 30 g/m². As an epidermis material layer (7), PET system nonwoven fabric epidermis material with a thickness of about 1mm was used.

[0060] The through tube (2) prepared the circular through tube (2) with a diameter of 8.0mm penetrated in the thickness direction of a foaming layered product which consists of a foaming layer (4), an indoor outside non-foaming layer (5 6), an allophone prevention layer (8), and an aeration stop film adhesive layer (10) at a rate of one piece in length and 29mm angle wide.

[0061] Some base materials for automobile interior material which formed the above-mentioned material in the same configuration as drawing 1 were cut down so that a through tube might become in the center by 29mmphi, and it considered as the sample for normal incidence sound absorption coefficient measurement, and the normal incidence sound absorption coefficient was measured. Consequently, the average with an acoustic absorptivity of 1000Hz – 5000Hz was 0.31, and was what fully fills a demand of a commercial scene.

[0062] It is the same component as an example 1 except using an epidermis material adhesives layer (9):polyolefine system hot melt film (Ohisi Sangyo [Co., Ltd. / Co., Ltd.] make: HIRODAIN 7586, with honor : 30g/m²) except for an allophone prevention layer (8). A foaming layer (4), (Example 2) A circular through tube (2) with a diameter of 8.0mm which is penetrated in the thickness direction of a foaming layered product which consists of an indoor outside non-foaming layer (5 6), an epidermis material adhesives layer (9), and an aeration stop film adhesive layer (10) and to penetrate It prepared in length and 29mm angle wide at a rate of one piece, and with epidermis material, some of the same automobile interior material base materials as drawing 2 which carried out the laminating of the aeration stop film to the rear-face side were cut down so that a through tube might become in the center by 29mmphi, and it considered as the sample for normal incidence sound absorption coefficient measurement, and the normal incidence sound absorption coefficient was measured. Consequently, the average with an acoustic absorptivity of 1000Hz – 5000Hz was 0.33, and was what fully fills a demand of a commercial scene.

[0063] (Example 3) It was the same as that of what was used in the example 1, and the allophone prevention layer (8) of an epidermis material adhesives layer (9) was the same as that of an example

2, except having carried out the laminating of the allophone prevention layer (8) to the maximum outdoor side of an example 2 (drawing 2), it cut down some of the completely same, same automobile interior material base materials as drawing 3 as an example 2 (drawing 2) like the example 2, and measured the normal incidence sound absorption coefficient. Consequently, the average with an acoustic absorptivity of 1000Hz - 5000Hz was 0.30, and was what fully fills a demand of a commercial scene.

[0064] (Example 1 of a comparison) Except not preparing a through tube, some of the same automobile interior material base materials of a configuration as an example 1 were cut down like the example 1, and the normal incidence sound absorption coefficient was measured. Consequently, an average with an acoustic absorptivity of 1000Hz - 5000Hz is 0.11, and did not result in the level which fills a demand of a commercial scene.

[0065]

[Effect of the Invention] Vibration of the film on the through tube section and the cross protection of the acoustic waves in a base material back air space can be made to discover by preparing a through tube and using the base material which carried out the laminating of the aeration stop film. By this, the dirt by ventilation is satisfactory, the high absorption-of-sound engine performance can be given to any base materials, it is cheap and the base material for automobile interior material and automobile interior material which were excellent in absorption-of-sound nature can be offered.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Drawing 1 is the important section expansion cross section of the base material for automobile interior material concerning this invention.

[Drawing 2] Drawing 2 is other important section expansion cross sections of the base material for automobile interior material concerning this invention.

[Drawing 3] Drawing 3 is the important section expansion cross section showing other 1 operation gestalten of the base material for automobile interior material concerning this invention.

[Description of Notations]

- 1: Base material
- 2: Through tube
- 3: Aeration stop film
- 4: Foaming core layer
- 5: Interior-of-a-room side non-foaming layer
- 6: Outdoor side non-foaming layer
- 7: Epidermis material
- 8: Allophone prevention layer
- 9: Epidermis material adhesives layer
- 10: Aeration stop film adhesive layer

[Translation done.]

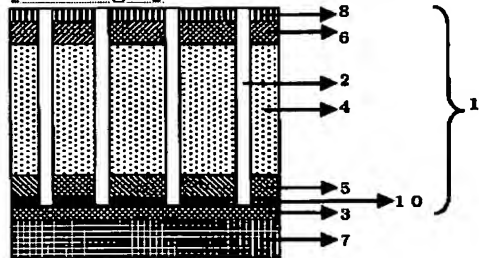
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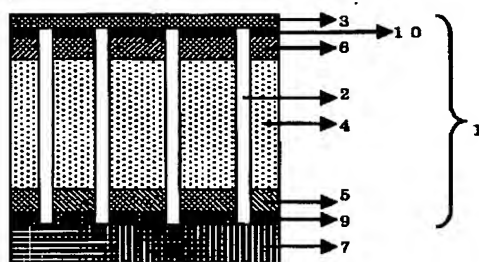
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DRAWINGS

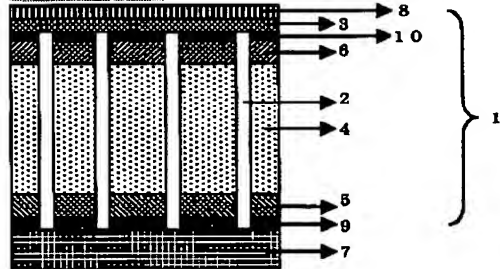
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]